

WHAT IS CLAIMED IS:

1. A motion controlled handheld device comprising:
  - a display having a viewable surface and operable to generate an image;
  - a gesture database maintaining a plurality of gestures, each gesture defined by

5 a motion of the device with respect to a first position of the device;

  - a motion detection module operable to detect motion of the handheld device within three dimensions and to identify components of the motion in relation to the viewable surface; and
  - a control module operable to:
    - 10 detect an indication to record a new gesture;
    - detect a stabilization of the components of the motion of the device;
    - upon detecting the stabilization, determine a base reference position;
    - record movement of the device with respect to the base reference position;

15 detect an indication to stop recording the new gesture;

  - define the new gesture using the recorded movement of the device with respect to the base reference position; and
  - store the new gesture in the gesture database.

20 2. The motion controlled handheld device of Claim 1, wherein detecting the indication to stop recording comprises detecting a second stabilization of the movement of the device.

25 3. The motion controlled handheld device of Claim 1, wherein detecting the indication to record comprises a selection of an input associated with a user interface of the device.

30 4. The motion controlled handheld device of Claim 3, wherein:
  - the selection of the input associated with the user interface of the device
  - comprises a key press; and

detecting the indication to stop recording comprises a key release.

5. The motion controlled handheld device of Claim 1, wherein the control module is further operable, before initial recording of the new gesture, to:

- prompt for a second recording of the new gesture;
- detect a second stabilization of the components of the motion of the device;
- 5 upon detecting the second stabilization, determine a second base reference position;
- record a second movement of the device with respect to the second base reference position;
- detect an indication to stop the second recording of the new gesture;
- 10 define the second recording of the new gesture using the recorded second movement of the device with respect to the second base reference position;
- confirm the initial recording of the new gesture if the second recording of the new gesture substantially matches; and
- 15 store the new gesture in the gesture database upon confirming that the initial recording of the new gesture substantially matches to the second recording of the new gesture.

6. The motion controlled handheld device of Claim 5, wherein the control module is further operable to:

- 20 blend results from the initial recording of the new gesture and the second recording of the new gesture to obtain a best fit version of the new gesture; and
- store the best fit version of the new gesture in the gesture database.

7. The motion controlled handheld device of Claim 1, further comprising:  
an application having a plurality of predefined commands;  
a user interface operable to receive user input associating the new gesture with  
one of the commands;  
5 a gesture mapping database comprising a command map for the application,  
the command map comprising a mapping of the new gesture to the associated  
command as indicated by the user input; and wherein  
the control module is further operable to:  
load the application;  
10 track movement of the handheld device using the motion detection  
module;  
match the tracked movement against the new gesture;  
identify, using the command map, the associated command mapped to  
the new gesture; and  
15 perform the associated identified command using the application.
  
8. The motion controlled handheld device of Claim 1, further comprising:  
a first accelerometer operable to detect acceleration along a first axis;  
a second accelerometer operable to detect acceleration along a second axis, the  
20 second axis perpendicular to the first axis; and  
a third accelerometer operable to detect acceleration along a third axis, the  
third axis perpendicular to the first axis and perpendicular to the second axis; and  
wherein:  
the gesture database further defines each of the gestures using a sequence of  
25 accelerations;  
the motion detection module is further operable to detect motion of the device  
using accelerations measured by the first accelerometer, the second accelerometer,  
and the third accelerometer; and  
the control module is further operable to match the accelerations measured by  
30 the motion detection module against gesture definitions in the gesture database to  
identify particular ones of the gestures.

9. A method for operating a motion controlled handheld device comprising:

generating an image on a viewable surface of the handheld device;

5 maintaining a gesture database comprising a plurality of gestures, each gesture defined by a motion of the device with respect to a first position of the device;

detecting an indication to record a new gesture;

detecting a stabilization of the components of the motion of the device;

upon detecting the stabilization, determining a base reference position;

recording movement of the device with respect to the base reference position;

10 detecting an indication to stop recording the new gesture;

defining the new gesture using the recorded movement of the device with respect to the base reference position; and

storing the new gesture in the gesture database.

15 10. The method of Claim 9, wherein detecting the indication to stop recording comprises detecting a second stabilization of the movement of the device.

11. The method of Claim 9, wherein detecting the indication to record comprises a selection of an input associated with a user interface of the device.

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12. The method of Claim 11, wherein:

the selection of the input associated with the user interface of the device comprises a key press; and

detecting the indication to stop recording comprises detecting a key release.

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13. The method of Claim 9, further comprising, before initial recording of the new gesture:

- prompting for a second recording of the new gesture;
- detecting a second stabilization of the components of the motion of the device;
- 5 upon detecting the second stabilization, determining a second base reference position;
- recording a second movement of the device with respect to the second base reference position;
- detecting an indication to stop the second recording of the new gesture;
- 10 defining the second recording of the new gesture using the recorded second movement of the device with respect to the second base reference position;
- confirming the initial recording of the new gesture if the second recording of the new gesture substantially matches; and
- 15 storing the new gesture in the gesture database upon confirming that the initial recording of the new gesture substantially matches to the second recording of the new gesture.

14. The method of Claim 9, wherein the gesture database further defines each of the gestures using a sequence of accelerations; the method further comprising:

- 20 detecting acceleration along a first axis;
- detecting acceleration along a second axis, the second axis perpendicular to the first axis; and
- detecting acceleration along a third axis, the third axis perpendicular to the first axis and perpendicular to the second axis;
- 25 detecting motion of the device using accelerations measured by the first accelerometer, the second accelerometer, and the third accelerometer; and
- matching the accelerations against gesture definitions in the gesture database to identify potential indicated ones of the gestures.

15. Logic for controlling a handheld device, the logic embodied in a computer readable medium and operable when executed to perform the steps of:

generating an image on a viewable surface of the handheld device;

maintaining a gesture database comprising a plurality of gestures, each gesture

5 defined by a motion of the device with respect to a first position of the device;

detecting an indication to record a new gesture;

detecting a stabilization of the components of the motion of the device;

upon detecting the stabilization, determining a base reference position;

recording movement of the device with respect to the base reference position;

10 detecting an indication to stop recording the new gesture;

defining the new gesture using the recorded movement of the device with respect to the base reference position; and

storing the new gesture in the gesture database.

15 16. The logic of Claim 15, wherein detecting the indication to stop recording comprises detecting a second stabilization of the movement of the device.

17. The logic of Claim 15, wherein detecting the indication to record comprises a selection of an input associated with a user interface of the device.

18. The logic of Claim 15, further operable when executed, before initial recording of the new gesture, to perform the steps of:

- prompting for a second recording of the new gesture;
- detecting a second stabilization of the components of the motion of the device;
- 5 upon detecting the second stabilization, determining a second base reference position;
- recording a second movement of the device with respect to the second base reference position;
- detecting an indication to stop the second recording of the new gesture;
- 10 defining the second recording of the new gesture using the recorded second movement of the device with respect to the second base reference position;
- confirming the initial recording of the new gesture if the second recording of the new gesture substantially matches; and
- 15 storing the new gesture in the gesture database upon confirming that the initial recording of the new gesture substantially matches to the second recording of the new gesture.

19. The logic of Claim 15, wherein the gesture database further defines each of the gestures using a sequence of accelerations; the logic further operable when 20 executed to perform the steps of:

- detecting acceleration along a first axis;
- detecting acceleration along a second axis, the second axis perpendicular to the first axis; and
- 25 detecting acceleration along a third axis, the third axis perpendicular to the first axis and perpendicular to the second axis;
- detecting motion of the device using accelerations measured by the first accelerometer, the second accelerometer, and the third accelerometer; and
- matching the accelerations against gesture definitions in the gesture database to identify potential indicated ones of the gestures.

20. A motion controlled handheld device comprising:

means for generating an image on a viewable surface of the handheld device;

means for maintaining a gesture database comprising a plurality of gestures, each gesture defined by a motion of the device with respect to a first position of the

5 device;

means for detecting an indication to record a new gesture;

means for detecting a stabilization of the components of the motion of the device;

means for upon detecting the stabilization, determining a base reference

10 position;

means for recording movement of the device with respect to the base reference position;

means for detecting an indication to stop recording the new gesture;

means for defining the new gesture using the recorded movement of the device

15 with respect to the base reference position; and

means for storing the new gesture in the gesture database.